Remarks

Independent claims 1 and 24 are amended to further recite that the claimed bearing cleaning composition contains a high molecular weight sulfonic acid. Claim 6 has also been amended to recite that the alkylbenzene sulfonic acid is the recited high molecular weight sulfonic acid from claim 1. Support for this limitation can be found at, for example, ¶¶ 9, 10, and 16. The specification discloses that the claimed composition preferably contains an alkylbenzene sulfonic acid, which is a high molecular weigh sulfonic acid. See ¶ 9. The most preferred high molecular weight sulfonic acid is about 96 weight percent of C_{10}-C_{16} alkylbenzene sulfonic acid. See ¶ 10. The specification further discusses that it is the high molecular weight sulfonic acid that acts as a catalyst in the phase transition of the composition from a Newtonian fluid to a Non-Newtonian grease-like composition. See ¶ 16.

Claims 11, 18, 21, and 24 have been amended to recite that the polishing agent is crystalline calcium carbonate as opposed to a non-crystalline form. Support for this limitation can be found at, for example ¶¶ 8, 11 and 16. The specification discloses that the polishing agent polishes the bearings and removes contaminants from around the bearing. See ¶ 8. It is also discussed that amounts of the polishing agent at the high end of the disclosed range will produce a more abrasive composition that may be less desirable for use with bearings made of softer materials. See ¶ 11. The specification also discloses that the particularly preferred material for the polishing agent is calcite, which is a crystalline form of calcium carbonate, and that the preferred polishing agent has a hexagonal crystalline structure with an irregular shape. *See*, ¶ 11. The phase transition of the composition to a Non-Newtonian grease-like composition is disclosed as being associated with the conversion of non-crystalline calcium carbonate particles to

crystalline wafer-like calcite particles. *See*, ¶ 16. An irregular crystalline shape would provide the required abrasiveness to the composition so that it can polish and remove contaminants from the bearing assembly. As such, it would be clear to one of skill in the art that an abrasive crystalline form of calcium carbonate, as opposed to a non-abrasive amorphous form, would be necessary in order to function as the polishing agent recited in the claims.

Claim 24 has also been amended to recite that the bearing assembly containing the disclosed bearing cleaning composition is operated for a period of time with the bearing cleaning composition in order to remove contaminants from the surface of the bearing assembly. Support for this limitation can be found at, for example ¶¶ 6 and 23. The disclosed method involves running the bearing assembly with the cleaning composition for a limited period to clean the bearing. See ¶ 6. The specification further discloses that during the period when the bearing is being run with the cleaning composition in it, the polishing agent in the cleaning composition causes contaminants to be loosened or abraded from the metal surfaces inside the bearing and suspended in the cleaning composition. See ¶ 23. Therefore, all of the limitations of the currently presented claims are fully supported by the specification.

The currently amended claims are not anticipated by, nor are they rendered obvious in light of either Waynick or Jao. Waynick discloses a lubricating grease for use in front wheel drive joints in automobiles. Calcium carbonate is added to the completed grease in Waynick as part of an anti-wear additive. Col. 11, ll. 36-40. Instead of disclosing the use of crystalline calcium carbonate, Waynick discloses that food grade calcium carbonate should be used in part "to minimize abrasive contaminants." Col. 11, ll. 57-60. Therefore, the calcium carbonate disclosed in Waynick is not abrasive enough to be considered a polishing agent. Not only does

Waynick not disclose that the calcium carbonate is sufficiently abrasive, it teaches away from the use of abrasive crystalline carbonate by teaching that care should be taken to minimize even contaminants in the calcium carbonate that may be abrasive. Waynick, col. 11, ll. 57-60. Therefore, despite the fact that Waynick discloses the use of calcium carbonate in a grease composition, it does not disclose the use of a polishing agent, whether made of calcium carbonate or any other substance.

Waynick also does not disclose the use of a high molecular weight sulfonic acid as part of the thickening system for the grease. Instead, Waynick discloses the use of polyurea thickeners and indicates that these are the preferred thickeners. Col. 5, ll. 12-20. In contrast, the specification of the invention discloses that the claimed composition is not recommended for use as part of a polyurea greases. See ¶ 21. Instead of a polyurea thickener, the invention discloses the use of a high molecular weight sulfonic acid and calcium carbonate to transition the composition from a Newtonian fluid to a Non-Newtonian grease-like composition. See ¶ 16. Thus Waynick does not disclose and in fact teaches away from the use of high molecular weight sulfonic acids as part of the thickening system for the overbased calcium sulfonate grease by directing one of skill in the art toward polyurea thickeners.

While Waynick does disclose that calcium sulfonate can be used in the composition, it does not disclose the use of an overbased calcium sulfonate in addition to a polishing compound, such as crystalline calcium carbonate. Instead, it discloses that calcium sulfonate that is overbased with calcium carbonate can be used as the source of the calcium carbonate additive in the final grease. Col. 13, ll. 9-22. In such a case, the calcium carbonate is **a part of** the overbased calcium sulfonate and is not a **separate** component of the composition as is recited in

the current claims. Nor is there any disclosure that the calcium carbonate that is used to overbase the calcium sulfonate would be an abrasive crystalline form that could serve as a polishing agent. In fact, as disclosed in Jao, it is likely that the calcium carbonate used to overbase the sulfonate will be in an amorphous form. See, e.g., Jao, col. 3, ll. 53-54 (example 1); col. 4, ll. 41-42 (example 3). Therefore, there is no disclosure or suggestion in Waynick of a composition that contains an overbased calcium sulfonate **and** a polishing agent, such as crystalline calcium carbonate.

The Jao reference does not disclose or suggest to one of skill in the art to modify Waynick to achieve the claimed invention. Jao discloses the in-situ formation of calcium carbonate through the addition of calcium oxide or calcium hydroxide and bubbling carbon dioxide through the mixture. Col. 1, ll. 34-40. This results in the in-situ creation of amorphous calcium carbonate in the grease. *See* e.g., col. 3, ll. 53-54 (example 1); col. 4, ll. 41-42 (example 3). Amorphous calcium carbonate lacks the hardness and abrasiveness that is necessary to function as a polishing agent in the grease. The only disclosed purpose for including calcium carbonate in the final grease disclosed in Jao is to overbase the calcium sulfonate grease. Col. 1, ll. 18-25. Therefore, Jao does not suggest the modification of the grease of Waynick to form the claimed invention.

None of the prior art references, either alone or in combination, disclose a method of using the disclosed bearing cleaning composition of the invention for a limited time in a running system to clean contaminants off a bearing while it is in service. Instead, the prior art compositions cited by the examiner were used as lubricating oil and greases. None of the prior art references disclosed using any composition in the bearing for a limited time to polish the

bearings and to remove contaminants, but instead were merely disclosed as the regular lubricants for structures such as bearings.

Specifically, Schnacke merely discloses a particular type of bearing structure that can be used to replace the grease in the bearing with fresh grease. The replacement of grease using various fittings, such as a grease zert and grease guns is known and does not anticipate or render obvious the claimed method. While simply replacing the grease with fresh grease will remove any contaminants that are present in the grease itself, it does nothing to clean contaminants off the bearing surfaces. The method disclosed in Schnacke still required the unit to be shut down periodically so that the bearing can be broken down and disassembled in order to clean contaminants off the metal surfaces of the bearing. As discussed in the specification, this results in the use of hazardous hydrocarbon solvents and requires downtime for the equipment or machinery while the bearing is being cleaned.

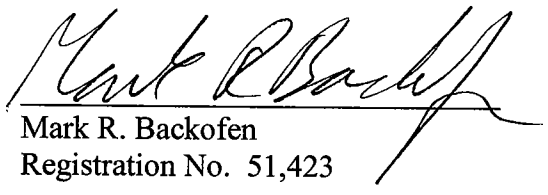
The claimed invention avoids this by using a cleaning composition in the bearing assembly for a limited time while the bearing remains in service. See ¶ 6. What is currently claimed is the removal of one or more contaminants from the surface of the bearing assembly by operating it for a period of time with the bearing cleaning composition. This feature is not taught or suggested in any of the prior art references. None of the prior art references disclose the use of a bearing cleaning compound that displaces the old grease, cleans and polishes the surfaces of the bearings while the equipment or machinery is in operation, and is then replaced by new grease.

Contrary to the examiner's assertion, it would not be obvious to use any prior art composition to clean the bearings according to the method of Scheacke. There is no suggestion

or motivation that a grease with a polishing agent could be used to clean the bearing surfaces. The cited prior art in fact teaches away from using calcium carbonate that is abrasive enough to act as a polishing agent in a grease composition. Waynick teaches that food grade calcium carbonate should be used in order to minimize abrasive contaminants that may be present. Waynick, col. 11, ll. 55-59. Likewise, Jao discloses the in-situ formation of only amorphous calcium carbonate in the grease, which also would not serve to polish and remove contaminants from the metal surfaces of the bearing assembly. Therefore, the use of the greases disclosed in Waynick and Jao according to the method disclosed in Scheacke would not result in the claimed method because there would not be any cleaning of contaminants off the bearing surfaces and the grease used would not contain a polishing agent as required by the claimed method.

For the reasons discussed above, it is respectfully submitted that all of the claims as now presented are patentable over the prior art. Accordingly, an early reconsideration and allowance of this application is respectfully requested. Please charge $120.00, the fee for a one-month extension of time for filing this response for a large entity to the Locke Liddell & Sapp LLP deposit account no. 12-1781. No other fees are believed to be due in connection with this paper. The Commissioner is hereby authorized to charge any additional fee due in connection with the filing of this paper to the Locke Liddell & Sapp LLP deposit account no. 12-1781.

Respectfully submitted,



Mark R. Backofen
Registration No. 51,423

Date: July 17, 2006
Locke Liddell & Sapp LLP
2200 Ross Avenue, Suite 2200

Dallas, TX 75201-6776
Telephone: (214) 740-8633
Facsimile: (214) 756-8633